

GREEN AUDIT REPORT
FOR
RKMV Govt. Girls College
Shimla, Himachal Pradesh



Submitted By:



ECI CONSULTING ENGINEERS

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New Delhi

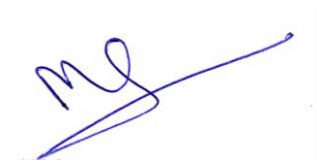
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1. Acknowledgement

M/s ECI Consulting Engineers, New Delhi team has conducted Green Audit of RKMV Govt College Shimla, Himachal Pradesh.

ECI hereby expresses sincere thanks to all RKMV team for their proactive support and courtesy extended to the audit team during the field study. We hereby also express our thanks to all college team members for their support during the field study. We hope that the recommendations/suggestions given in this report will help to reduce the present Energy & Water Consumption of the plant with reduced operational cost & save the environment.



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2. Introduction:

Rajkiya Kanya Maha Vidyalaya (R.K.M.V) is a premier educational institution which is graded B++ by NAAC and also conferred with the status of “College with Potential for Excellence” by UGC. It is the only government college for girls in Himachal Pradesh. The college is situated on Elysium Hill in the vicinity of Longwood on one side and Lakkar Bazaar on the other. The College is conveniently approachable being just ten minutes’ walk from the Ridge, Shimla and can be reached by local buses plying on the Cart Road, near which it is located.



The College was taken over by the Government of Himachal Pradesh in 1977 and a year later, in 1978, on public demand, this became an exclusively girl’s college. It was then renamed as Rajkiya Kanya Maha Vidyalaya. At present this institution is nurturing and honing more than 4000 young minds every year, giving them ample opportunity to grow, develop and excel. Rajkiya Kanya Maha Vidyalaya (RKMV), has evolved to become an educational institution par excellence in the state. The college focuses on the holistic development of the girls, inculcating values in them and nurturing self-esteem, confidence and independent thinking. Special emphasis is laid on the value-based education with a progressive outlook, to help girls succeed in a highly competitive world. The college has made progress by leaps and bounds under subsequent Principals. During the initial years, the college offered Bachelor’s Degree in Humanities and Sciences but very soon Commerce was added to this. Now-a-days apart from English Honours, Self- Financing courses- like BCA, e-commerce and add-on courses like

Computer Applications, Journalism and Mass Communication and Travel and Tourism Management are also being offered by this college.

On 01-04-1994 foundation stone of ScienceBlock and Auditorium was laid by the then Honourable Chief Minister Raja Virbhadra Singh. The Auditorium can accommodate approximately 400 – 500 audience which is being utilized for educational, cultural and co-curricular activities. The college incorporates a library which abounds in books, magazines, journals, and periodicals. It is one of the oldest college libraries in the state. With more than 35, 000 books, periodicals, magazines pertaining to various subjects, the library and its spacious reading room can be seen packed to the capacity during peak hours. The library is fully computerized and can offers an unrestricted access to information through e-resources. It has a spacious reading room. The college also provides boarding and lodging facilities to the girls in its two hostels. The old Sainik Girls Hostel has the capacity to accommodate 72 girls. The Tribal hostel has the capacity to accommodate 90 girls in 30 rooms.

The overall picture of the College is one of a well-equipped institution with Lecture Halls, Laboratories, Computer Labs, Language Lab, Computerized Library, Auditorium, Common Room, Gym, Dispensary and Canteen. The college has an Energy Club to boost awareness and aptitude for Energy Conservation and Energy Efficiency in young minds to progress towards an Energy Efficient and sustainable future. The college also have activesports groups along with many extension activities like NSS, NCC, Bharat Scouts & Guides, Eco-Club, Red-Cross & Rotary-Club whose memberships are available and can also be opted for by the students as per their interest. These activities are of great importance to train the students in various soft skills besides building team spirit, discipline and a sense of responsibility and leadership.

The college encourages girls to participate in academics, sports, cultural, NCC, NSS, activities organized at state, national and international levels. Girls Students of RKMV have proved their mettle in every sphere. Equally they are aware of their responsibilities towards society.

3. Energy Consumption

3.1 Electrical Energy Consumption details in RKMV:

The electricity supply for RKMV College is provided by Himachal Pradesh State Electricity Board Limited (HPSEBL). The electricity supply is divided into four energy connection with separate energy meters in college campus which are as follows:

Sr. No.	Block/Section	Contracted Demand	Connected Load
1	RKMV Science Block	173 KVA	195 KW
2	RKMV Administration Block	44 KVA	50 KW
3	RKMV Tribal hostel	70 KVA	84 KW
4	RKMV Military hostel	49 KVA	49 W

3.2 Major Sources of Electricity Consumption in the Campus:

- 1) Lightning
- 2) Computers
- 3) Electric Geysers
- 4) Science Lab Equipments

Energy observations :

- ❖ Number of LED lights – 148
- ❖ Number of LED tubelights- 149
- ❖ Number of Heat pillar – 74
- ❖ Number of Microwave oven - 8
- ❖ Number of Tube lights – None
- ❖ Number of Transformers – 1
- ❖ Number of Printers –18
- ❖ Number of Xerox Machines– None
- ❖ Number of Computers_ 143
- ❖ Energy generation by solar panels – 20 kW
- ❖ Number of Water Geysers-10

❖ Number of Refrigerator- 5

❖ Fans (Exhaust)-74

❖ Oven- 10

❖ Projector-6

❖ Total electricity consumption of the College is on average of 1319.907 KWh (Approx Sept-2022)

3.2 Monthly Electricity Consumption Details for FY 2021-22.

Month	RKMV Science Block (in KWh)	RKMV Administration Block (in KWh)	RKMV Tribal Hostel (in KWh)	RKMV Military hostel (in KWh)
April 21	21	3754	4461	2817
May 21	-	2490	3341	1901
June 21	0	961	1662	543
July 21	0	1219	1588	564
Aug 21	0	2172	2797	1726
Sep 21	0	2044	1772	1203
Oct 21	0	3264	3228	1713
Nov 21	0	3002	3205	2324
Dec 21	0	4026	4523	2709
Jan 21	3	6628	5419	3916
Feb 22	10	4026	2173	1165
Mar 22	8	5969	4690	2520
FY 2021-22	42	39555	38859	23101

Total Electrical Energy Consumption in RKMV Campus in FY 2021-22 is **1,01,557 KWh/Units**(as per electricity bills provided by RKMV Administration).

3.3 Energy Conservation Measures Implemented in RKMV

RKMV has a dedicated Energy Club with Faculty and Students as its members. The club actively works to implement Energy Conservation measures and spread awareness on Energy Conservation in the campus and its vicinity.

Currently, RKMV has adopted following Energy Saving methods in the campus:

- a. Turn off electrical equipment when not in use.
- b. Use of energy efficient Light Emitting Diode (LED) Bulbs instead of incandescent and CFL bulbs.
- c. Maintain appliances and replace old appliances.
- d. Use computers and electronic equipment in power saving mode.
- e. Installation of Rooftop Solar Power System for electricity and hot water requirements.

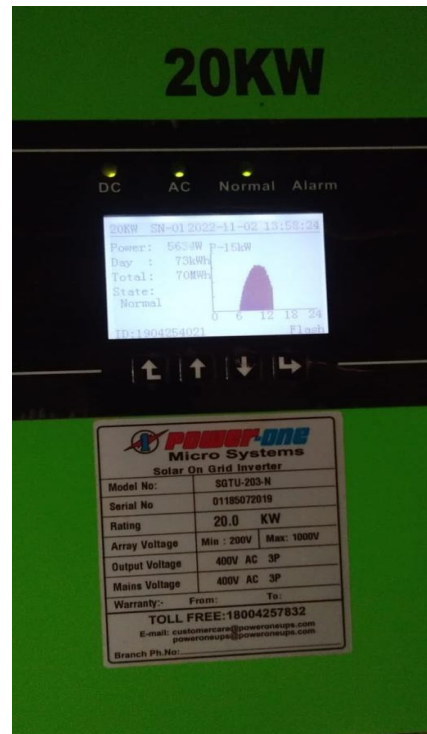
4. Solar Energy Scenerio:

4.1 RKMV Installed a Rooftop Solar Power System in Science block.

RKMV has installed a rooftop solar power system in science block to reduce dependency and burden on requirement for supply of electricity from the grid. The specifications of the rooftop solar power system are as follows:

Capacity:	20 kW
Maker:	Power -one Micro systems
Model No:	SGTU-203-N
Output Voltage:	400V AC (3P)

Total Solar Energy generation in FY 2021-22 is **26,511 KWh/Units.**





Rooftop Solar Power System Installation in Science Block

4.2 Solar Energy Generation for FY 2021-2022:

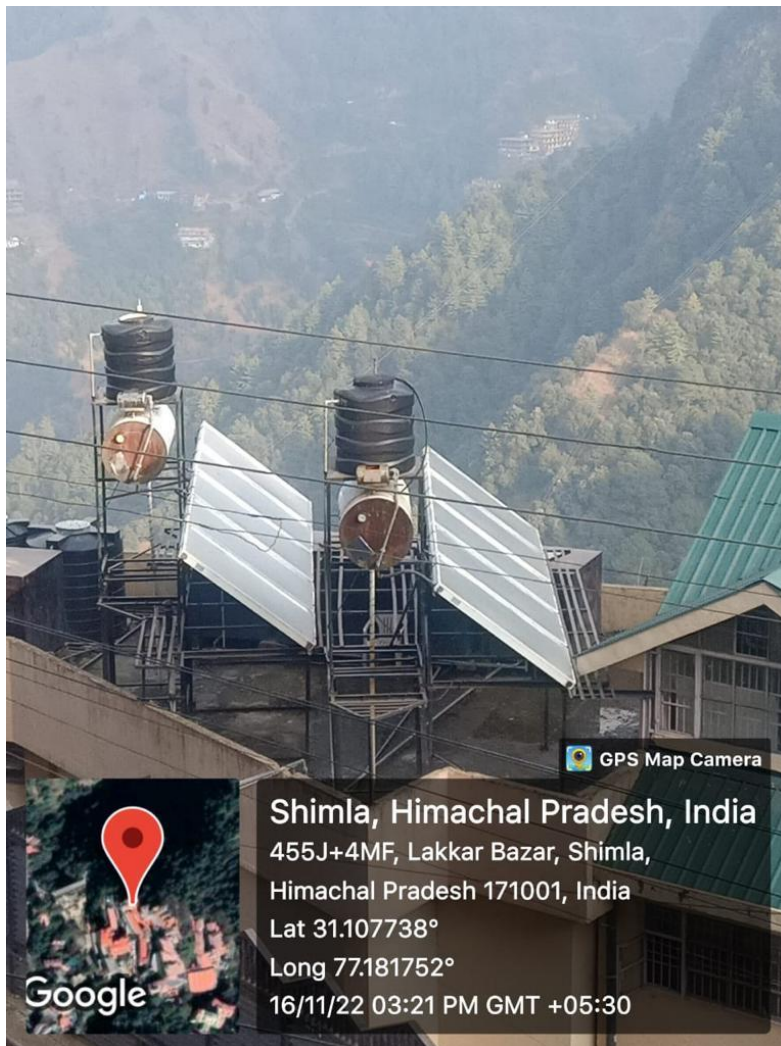
Sr. No.	Month	Total Solar Energy Generation (in KWh)
1	April-21	2477
2	May-21	3109
3	June-21	2497
4	July-21	2822
5	Aug-21	1740
6	Sep-21	1701
7	Oct-21	3226
8	Nov-21	2130
9	Dec-21	2158
10	Jan-22	1849
11	Feb-22	893
12	Mar-22	1909
	TOTAL	26,511

Comparison of Energy bill Before and after installation of solar roof top system in RKMV Science Block (KWh).

Sr.No.	Jan-Dec 2019 (Before Implementation)		Jan-Dec 2021 (After Implementation)		Monthly Energy Savings (KWh)
	Month	Meter Reading (KWh)	Month	Meter Reading (KWh)	
1.	Jan-19	2258	Jan-21	179	2079
2.	Feb-19	647	Feb-21	0	647
3.	Mar-19	2222	Mar-21	0	2222
4.	Apr-19	2717	Apr-21	21	2696
5.	May-19	1179	May-21	NA	NA
6.	June-19	1062	June-21	0	1062
7.	July-19	755	July-21	0	755
8.	Aug-19	1250	Aug-21	0	1250
9.	Sep-19	NA	Sep-21	0	NA
10.	Oct-19	2382	Oct-21	0	2382
11.	Nov-19	1614	Nov-21	0	1614
12.	Dec-19	2493	Dec-21	0	2493

4.3 RKMV Installed Solar Water Heating System in Tribal Hostel.

RKMV has also installed solar water heating system for daily hot water requirements of Tribal hostel which is accommodating 90 girls in 30 rooms. The system installed is sufficient to fulfil the hot water requirements of all of its occupants. The energy audit team discovered some faults in this unit's operation. After discussion with administration of RKMV it was noted that RKMV administration is already in process of rectifying the system. This will lead to more energy savings in the campus.



5. Other Energy Conservation measures implemented in RKMV Campus

RKMV campus employs large windows and sun-roofs to allow direct sunlight into its classrooms, laboratories, library and other facilities that reduce the requirement and dependency on electricity-based lighting systems.



6. Waste Management:

Waste management deals with all types of waste, including industrial, biological, household, municipal, organic, biomedical, radioactive wastes. Waste management or waste disposal includes the processes and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste-related laws, technologies, economic mechanisms. RKMV College has biodegradable and non-biodegradable dustbins in place. Complete garbage is picked up by Municipal Corporation Shimla in systematic manner on daily basis.



7. Rain Water Harvesting

It is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation, so that it seeps down and restores the ground water. Rain harvesting tank in RKMV College is under construction in new building of College.

8. Plantation:

RKMV College campus is located in lush green forest area of Jakhu Hills in Shimla and management is very environmental friendly and additional plantation is also done by the eco-club in college premises and around on regular basis.





9. Recommendations on Energy Conservation for the institution

The energy audit team visited the campus and hostel of RKMV and after careful observations and monitoring of facilities and equipments made following recommendations to the administration:

- f. Use the “OFF” switch, rather than the “STAND BY” mode.
- g. Switch off lights, heater & other equipments when not in use.
- h. Use LEDs instead of conventional light sources (wherever LEDs are not installed).
- i. Utilize team of energy club to spread awareness on Energy Conservation & organize activities at inter-college and intra college level to boost innovative thought process for Energy Conservation in young minds.
- j. Co-ordinate with govt departments and other schools and colleges and share best practices amongst themselves.

- k. Use solar lights for streets and open corridors of the campus.
- l. Do necessary repairs and maintenance of the Solar Water Heating System at the earliest.
- m. Check for BEE star label before purchasing equipments, lights and other accessories.
- n. Use electricity efficiently & effectively.